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# PATENT SPECIFICATION

Application Date: July 7, 1920. No. 19,184/20.

168,216

Complete Accepted: Sept. 1, 1921.

## COMPLETE SPECIFICATION.

### Improvements in and relating to Gagging-appliances and Tongue Depressors.

I, WILLIAM J. CAMERON, Manufacturer, of 6, East Lake Street, Chicago, State of Illinois, United States of America, a subject of the King of Great Britain, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 This invention relates to improvements in gagging-appliances and tongue depressors and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

15 The gagging-appliance and tongue depressor shown herein as embodying the novel features of the invention is one primarily intended for use in connection with operations upon parts within the mouth or throat.

20 The gagging-appliance is characterized by an improved tongue depressor which is slidably and pivotally associated with a hinge which forms a part of the appliance. The depressor, therefore, may be raised and lowered at the front and rear ends, it may be advanced or withdrawn longitudinally, and it may be finally tilted to depress one side of the tongue more than the other side. The general adjustment of the depressor, however, is secured. Owing to the swivel connection of the screw spindle with the hinge this general annular and rotary movement of the depressor is made possible so as to reach all the necessary parts which are to be treated or reached by the depressor.

35 The invention also includes means for 40 instantaneously interrupting the engagement between a nut and casing through which the spindle extends, whereby

instantaneously the spindle may be released. This nut forms a part of a lever which projects from the appliance and 45 which is normally forced into yielding engagement with the spindle.

In the drawings:

Figure 1 represents a perspective view of my improved gagging-appliance and 50 tongue depressor illustrating the same as when applied to a patient, to hold the mouth in an open position, to illuminate the interior thereof and to hold the tongue of the patient in a depressed position. 55

Figure 2 represents a vertical section through the device, the plane of the section being indicated by the line 2—2 of Figure 3. 60

Figure 3 represents a view in front elevation of the device.

Figure 4 represents a horizontal section through the device, the plane of the section being indicated by the line 4—4 of 65 Figure 3.

Figure 5 represents on an enlarged scale, a detail horizontal section through a part of the device the plane of the section being indicated by the line 5—5 of 70 Figure 2.

Figure 6 represents on an enlarged scale, a detail vertical section through a part of the device, the plane of the section being indicated by the line 6—6 of Figure 75 2.

Figure 7 represents a detail view in front elevation of a slightly modified form of device embodying the invention.

The improved device, is of a general 80 type well known. It includes two frame members comprising opposed arms having hooks at their outer ends to engage the parts to be retracted; and connecting

[Price 1/-]

spared laterally from the hooks and extending substantially at right angles to the arms, which bars are capable of longitudinal adjustment, the one upon the other, to determine the space between the retracting hooks.

Referring now in detail to that embodiment of the invention illustrated in Figures 1 to 6 inclusive of the accompanying drawings:—10 and 11 indicate the two frame members, in this case, the bottom and top frame members of the retractor.

The bottom frame member 10 comprises a relatively long, upright bar 12 having teeth 12<sup>a</sup> on its outer edge, and a shorter horizontal arm 13 which terminates at its inner end in a short, upright plate 14, the top end of which is bent forwardly and downwardly to provide a hook 14<sup>a</sup>. The top frame member 11 comprises a relatively short, downwardly extending bar 16 and a horizontal arm 15. The bar 16 is provided with a sleeve 17 that embraces and is capable of a sliding bearing on the upright bar 12 of the bottom frame member 10. The outer end of the horizontal arm 15 terminates in a depending plate 18 arranged in the vertical plane of the plate 14 and the bottom end of said plate 18 is bent forwardly and upwardly to form a hook 18<sup>a</sup>. As is apparent, the hooks 14<sup>a</sup> and 18<sup>a</sup> are oppositely disposed with reference to each other. In the outer end of the sleeve 17 is journaled a spur pinion 17<sup>a</sup> that meshes with the teeth 12<sup>a</sup> on the arm 12, and said pinion has a butterfly nut or extension 17<sup>b</sup> by means of which it may be rotated. When the butterfly nut is rotated, a relative vertical adjustment or movement will take place between the frame members 10 and 11.

Removably mounted on the hook 18<sup>a</sup> of the top frame member 11, is an illuminating attachment indicated as a whole at 20. As said illuminating attachment is the same as that shown in my prior Patent No. 146,475 I will here refer to the same in general terms only and not in detail. Said detachment includes a forwardly extending casing or barrel 21 that carries a light 22 at its front end and a slotted plate 23 at its rear end. The slotted plate 23 which is bent to conform with the curvature of the hook 18<sup>a</sup>, embraces the rear part of said hook, while the main part of said plate rests upon the top surface of said hook. Said plate carries at one end, a contact plug 24 which is adapted to be connected up with a socket 25 on the end of an electric current conducting cord 26 (see Figure 1.)

Fixed to the rear or outer face of the upright plate 14 of the bottom frame member 10, is a hinge plate or leaf 27. To the top edge of said leaf is hinged the front end of another plate or leaf 28 which swings or tilts in a vertical plane and which normally assumes a substantially horizontal position. The leaf 27 has at its bottom end, a rearwardly extending, rectangular casing 29 that is open at its rear end. Extending vertically through aligned openings in the top and bottom walls of this casing, is an adjustment screw 30 which is connected at its top end by a swivel joint 31 to the free end of the leaf 28, the bottom end of said screw having a head 30<sup>a</sup> by means of which it may be rotated. In the casing 29 is located a horizontally swinging lever 32 which has a screw threaded recess 32<sup>a</sup> (see Figure 5), that normally engages that part of the screw 30 within the casing 29, so as to provide the necessary screw-threaded supporting engagement for said screw. The lever 32 is pivoted at its inner end upon a vertical pin 33 in the casing, and its outer end is bent to provide a thumb piece 32<sup>b</sup>. A flat spring 34 within and fixed to one upright side wall of the casing 29, engages with said lever and acts to normally hold said lever in threaded engagement with the screw 30. When the thumb piece 32<sup>b</sup> is actuated by the thumb of the operator, the screw threaded recess 32<sup>b</sup> is released from engagement with said screw. As soon as the thumb piece 32<sup>b</sup> is released, the spring 34 will return said lever to its normal position wherein the screw threaded recess 32<sup>a</sup> again engages said screw.

35 indicates a tongue depressor plate which is detachably connected to the leaf 28 in such a manner as to be capable of being longitudinally adjustable thereon and at the same time, is capable of being swung in a horizontal plane about its point of attachment to said leaf 28. As shown, said tongue depressor throughout a greater part of its length, is of a width equalling that of the leaf 28, with which it is associated. The inner end 35<sup>a</sup> of said tongue depressor is widened out and curved more abruptly to fit the tongue of the patient upon which the retractor is used and its outer end is bent into a hook 35<sup>b</sup> to provide a convenient grip for the operator. In said tongue depressor is provided an elongated key hole slot 36, the side walls of which have a slight upward and outward bevel, as shown in Figures 4 and 6. The said slot terminates at its front end in an enlargement 36<sup>a</sup>.

Carried on the leaf 28 between its con-

nections to the leaf 27 and screw 30 respectively, is an upright, yielding stud 37 which is adapted to extend through the slot 36 in the tongue depressor and provide both the means for frictionally holding the tongue depressor on the leaf 28, and the pivotal means about which said depressor may be swung in a horizontal plane. This stud (see Figure 6) extends through a hole in the leaf 28 and has heads 37<sup>a</sup> and 37<sup>b</sup> at its top and bottom ends and there is a coiled spring 38 which surrounds that part of said stud between the leaf 28 and the bottom head 37<sup>b</sup>. The top head 37<sup>a</sup> is of a diameter less than that of the slot enlargement 36<sup>a</sup>, and has tapered sides which are normally held in frictional engagement with the sides of the slot 36. To attach the tongue depressor in place, it is placed upon the leaf 28 with the enlargement 36<sup>a</sup> surrounding the head 37<sup>a</sup> of the stud 37. The tongue depressor is then moved inwardly the head 37<sup>a</sup> engaging the bevelled side walls of the slot in a manner frictionally holding said depressor in place. To detach the depressor plate from the leaf 28, said depressor is pulled outwardly until the enlargement 36<sup>a</sup> coincides with the head 37<sup>a</sup>, when the tongue depressor may be removed from the said leaf.

Assuming that the retractor is to be used upon a patient for the purpose of an examination of the mouth and throat, the manner of applying the retractor to said patient and its use thereof after having been applied is as follows:

With all the parts in place upon their respective frame members, the butterfly nut 17<sup>b</sup> is rotated to move the horizontal arms 13 and 15 towards each other, until they are close enough together to permit the introduction of the hooks 14<sup>a</sup> and 18<sup>a</sup> into the open mouth of the patient. With the frame members placed on the right hand side of the face of the patient, the inner end of the depressor plate is inserted in the mouth of the patient and the hooks are then lined up with the anterior teeth of the patient, on the median line of the face. The butterfly nut 17<sup>a</sup> is actuated to rotate the pinion 17<sup>a</sup> which by reason of its engagement with the rack teeth 12<sup>b</sup>, causes the hooks 14<sup>a</sup> and 18<sup>a</sup> to engage said anterior teeth. This movement is continued until the jaws of the patient have been separated to present the desired mouth opening. Should discomfort be caused to the patient, by reason of the two great separation of the jaws, this may be quickly relieved by rotating the butterfly nut in the opposite direction.

With the parts in this position, the

tongue depressor 35 (assuming that the same has been attached in place to the leaf 28) may be moved forwardly against the frictional resistance of the head 37<sup>a</sup> of the stud 37, until the widened-out, inner end 35<sup>a</sup> of said depressor engages that part of the tongue near the palate.

By turning the adjusting screw 30, the leaf 28 and with the tongue depressor 35, is tilted vertically so as to depress the inner end of said tongue depressor to suitably hold the tongue in the position most convenient for the requirements of the surgeon or dentist using the retractor. Should it be desired to shift the inner end of the depressor laterally to engage either side of the tongue, the hooked outer end of the depressor 35 is grasped by the operator and swung horizontally, in the proper direction about the stud 37, as a pivot, until the inner end of the depressor engages that part of the tongue before determined.

Should this pressure on the tongue tend to gag or otherwise discomfort the patient, the pressure may be instantly relieved by actuating the lever 32 in the casing 29, to disengage the threaded recess 32<sup>a</sup> from the screw 30. This will permit the depressor to assume a pressure upon the tongue which is convenient to the patient without gagging. Should it be desired, this pressure may be again increased by turning the screw 30 as before mentioned. While the means just described will instantly release the pressure of the depressor 35, it need not be used unless desired or necessary, because as is apparent, the pressure of the depressor on the tongue may also be brought about by turning the adjusting screw in the opposite direction.

Should it be found necessary to instantly remove the tongue depressor from the mouth of the patient, this may be done in the following manner. The hooked end 35<sup>b</sup> of the tongue depressor is grasped by the operator and an outward pull or movement is then imparted thereto until the slot enlargement again coincides with the stud head 37<sup>a</sup>, after which the tongue depressor may be lifted out of engagement with its associated leaf 28.

To replace the depressor plate, it is placed on the leaf with the slot enlargement 36<sup>a</sup> coinciding with the head 37<sup>a</sup>, after which an inward movement is imparted to the tongue depressor, whereupon the said head will engage the side walls of the slot 36.

In Figure 7 is illustrated a modified form of construction, wherein the leaf 27 is pivotally attached to the plate 14<sup>a</sup> by

means of a rivet 40, so that said leaf, together with the leaf 28 and tongue depressor 35, may be swung about a horizontal axis, this swinging movement being limited by a second rivet 41 which is fixed to the plate 14 about the rivet 40, so as to extend through an arcuate slot 42 in the leaf 27. By this construction, the tongue depressor may be caused to depress either side of the tongue of the patient, so as to hold it away from the teeth of the patient, thus greatly facilitating dental operations.

It is apparent from the foregoing description, that the retractor as a whole may be quickly applied in position and without discomfort to the patient and after having been applied, the tongue depressor may be adjusted vertically and then quickly released by the lever 32 when the occasion demands. Furthermore, the said tongue depressor may be adjusted inwardly or outwardly or laterally in either direction, or may be quickly removed from and applied to the rest of the retractor without disturbing the position of the frame members thereof.

It is apparent that my improved retractor permits of an advantageous and illuminated view of the interior of the mouth and throat, whether for examination or operation. The light 22 is located in such position as to illuminate the interior of the mouth without shadows and without discomfort to the patient from heat.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. Gagging-appliance including two slidably connected parts terminating in hook-shaped portions, a hinge associated with one of said parts, and a tongue depressor slidably and pivotally associated with said hinge.

2. Gagging-appliance, as set forth in Claim 1, including means for angularly positioning that blade of the hinge to which the tongue depressor is adjustably secured.

3. Gagging-appliance, as set forth in Claims 1 and 2, including a screw spindle engaging the hinge blade to which the tongue depressor is secured, and means

for maintaining said screw spindle, and thereby the tongue depressor, in adjusted position.

4. Gagging-appliance, as set forth in Claims 1 and 3, including a swivel connection between the screw spindle and the hinge blade to which the tongue depressor is secured whereby angular movement of said hinge blade with respect to the screw spindle is made possible.

5. Gagging-appliance, as set forth in Claims 1 and 3, including a nut engagement with the threads of the screw spindle, and means for instantaneous interrupting this engagement to release the spindle from adjusted position.

6. Gagging-appliance, as set forth in Claims 1, 3, and 5, including a casing through which the spindle extends, the nut in engagement with the spindle forming a part of a lever projecting through the casing and having a portion permitting instantaneous separation of the lever from engagement with the spindle for releasing the spindle from adjusted position.

7. Gagging-appliance as set forth in Claims 1, 3, and 6, including a yielding element in the casing forcing the lever with the threaded portion into engagement with the spindle and adapted to reestablish engagement between lever and spindle upon release of the projecting end of the lever.

8. Gagging-appliance, as set forth in Claim 1, including a slot in the tongue depressor and a spring-controlled member mounted in the hinge blade to which the depressor is secured and connecting said depressor with said blade.

9. Gagging-appliance, as set forth in Claim 1, having one hinge blade pivotally secured to a part of the retractor to permit angular adjustment of said hinge blade whereby one side of the tongue may be depressed to a larger extent than the other side upon proper adjustment of said hinge blade.

10. Gagging-appliance and tongue depressor substantially as described and shown, and for the purpose set forth.

Dated this 7th day of July, 1920.

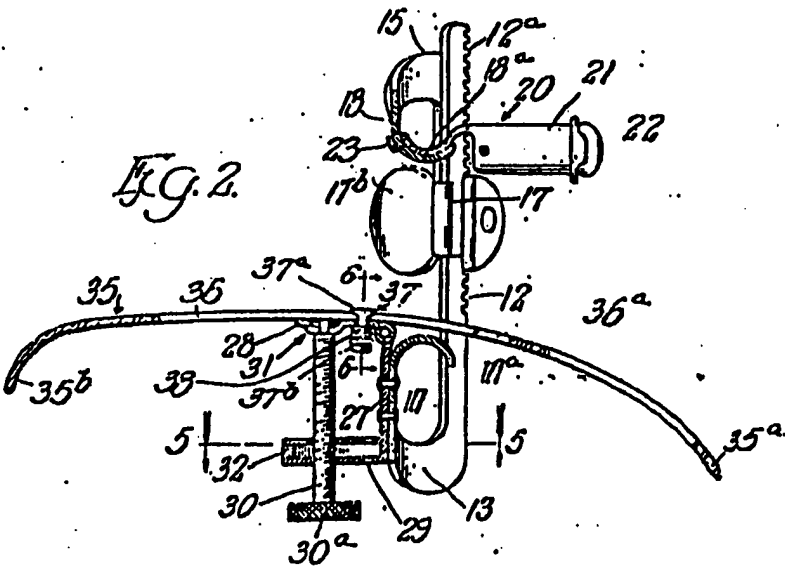
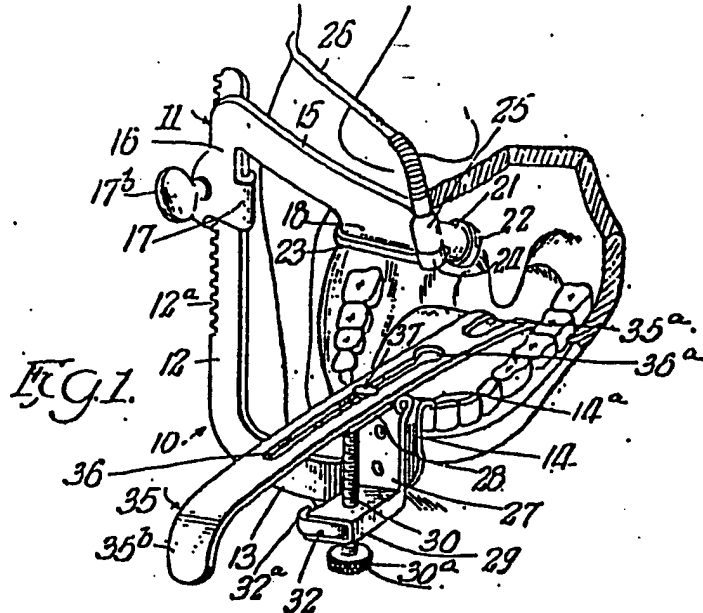
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